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NOTICE OF ALLOWANCE AND FEE(S) DUE

49698 7590 04/08/2008

MICHAUD-DUFFY GROUP LLP
306 INDUSTRIAL PARK ROAD
SUITE 206
MIDDLETOWN, CT 06457

EXAMINER

COOLEY, CHARLES E

ART UNIT

PAPER NUMBER

1797

DATE MAILED: 04/08/2008

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/538,295 | 12/14/2005 | Claes Wase | 6485-0048WOUS | 3560 |

TITLE OF INVENTION: METHOD OF PURIFYING CONTAMINATED OIL IN A CENTRIFUGAL SEPARATOR USING A SEPARATION AID AND STARTING LIQUID

| APPLN. TYPE | SMALL ENTITY | ISSUE FEE DUE | PUBLICATION FEE DUE | PREV. PAID ISSUE FEE | TOTAL FEE(S) DUE | DATE DUE |
|----------------|--------------|---------------|---------------------|----------------------|------------------|------------|
| nonprovisional | NO | \$1440 | \$300 | \$0 | \$1740 | 07/08/2008 |

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

**Complete and send this form, together with applicable fee(s), to: Mail Mail Stop ISSUE FEE
Commissioner for Patents
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or Fax (571)-273-2885**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

49698 7590 04/08/2008

MICHAUD-DUFFY GROUP LLP
306 INDUSTRIAL PARK ROAD
SUITE 206
MIDDLETOWN, CT 06457

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

| |
|--------------------|
| (Depositor's name) |
| (Signature) |
| (Date) |

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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nonprovisional NO \$1440 \$300 \$0 \$1740 07/08/2008

| EXAMINER | ART UNIT | CLASS-SUBCLASS |
|----------|----------|----------------|
|----------|----------|----------------|

COOLEY, CHARLES E 1797 494-037000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

4b. Payment of Fee(s); (Please first reapply any previously paid issue fee shown above)

- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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| 49698 | 7590 | 04/08/2008 | EXAMINER | |
| MICHAUD-DUFFY GROUP LLP 306 INDUSTRIAL PARK ROAD SUITE 206 MIDDLETOWN, CT 06457 | | | COOLEY, CHARLES E | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1797 | |
| DATE MAILED: 04/08/2008 | | | | |

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 419 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 419 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Notice of Allowability

Application No.

10/538,295

Applicant(s)

WASE, CLAES

Examiner

Art Unit

Charles E. Cooley

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the application as filed.
2. ☒ The allowed claim(s) is/are 1-7.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
- * Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date ____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).**
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date 20050610
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date ____.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other ____.

EXAMINER'S AMENDMENT/REMARKS

1. This application has been reassigned to Technology Center 1700,
DIVISION 7: Art Unit 1797 and the following will apply for this application:

Please direct all written correspondence with the correct application serial number for this application to **Art Unit 1797**.

Telephone inquiries regarding this application should be directed to the Electronic Business Center (EBC) at <http://www.uspto.gov/ebc/index.html> or 1-866-217-9197 or to the Examiner at (571) 272-1139. All official facsimiles should be transmitted to the centralized fax receiving number 571-273-8300.

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

3. The application has been amended as follows:

Amendments to the Title:

Replace the title with -- Method of purifying contaminated oil in a centrifugal separator using a separation aid and starting liquid --.

Amendments to the Specification:

Replace ¶ [0009] with the following replacement paragraph:

[0009] According to the invention, in use of a method as initially defined, the ~~Separation~~ separation chamber of the centrifugal rotor is pre-charged with a starting liquid, which is heavier than the oil and insoluble therein, in an amount such that a layer of the starting liquid forms a liquid seal in the centrifugal rotor, covering said heavy phase outlet. Only after such pre-charging of the separation chamber the contaminated oil and the liquid separation aid are supplied to the separation chamber, at least part of the starting liquid together with liquid separation aid and particles, separated from the oil, being discharged from the separation chamber through said heavy phase outlet.

Replace ¶ [0017] – [0019] with the following replacement paragraphs:

[0017] The method according to the invention may advantageously be used for purification of mineral or synthetic oils containing additives in order to give the oil the desired properties for the intended application, at which the density of the oils lie in the interval of ~~0,85 – 1,05~~ 0.85 – 1.05 g/cm³ at 40 °C.

[0018] The method of the invention may with advantage be used for mineral oils, 20 which have been contaminated with very small particles, for example very small soot particles or metal particles which are floating in the oil and therefore do not settle. Mineral oils have usually a density of ~~0,85 – 0,90~~ 0.85 – 0.90 g/cm³ at 40 °C.

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Earlier the only possibility to purify oil containing this kind of contaminants have been to use kieselguhr or bleaching clay filters, which filter materials are expensive and create problems in connection with deposition of the used filter beds.

[0019] If the mineral oil has been used as an insulating agent in a transformer or tap changer and is free from additives apart from a necessary oxidation ~~30~~ inhibitor, the separation aid with advantage may be a liquid polymer, which binds the small soot particles that are present in the oil. Also rolling oil as well as chlorine-paraffin oil contaminated with very small metal par-tides may be cleaned in this way.

Replace ¶ [0021] – [0023] with the following replacement paragraphs:

[0021] One example of a suitable liquid polymer for purification of these kinds of oils is a polyhydroxy alkoxyate with a density of ~~1,0–1,1~~ 1.0 – 1.1 g/cm³ at 40 °C.

[0022] Example I

A mineral oil that has been used as an insulating agent in a tap changer and is contaminated with soot particles should be purified from the same. The amount of oil in the tap changer may be 200 - 1500 litres. For the purification there is used a mobile centrifugal separator MIB303S-13 from Alfa Laval AB. Depending on the time interval between consecutive purification operations the oil contains ~~1–10%~~ 1 – 10% soot. The rotor of the centrifugal separator is started and is brought to rotate at full speed.

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Separation aid in the form of a liquid polymer is added to the rotor in an amount of ~~0,7-1~~ 0.71. The polymer is forced to flow to the outer part of the separation chamber of the rotor by centrifugal force, where it forms a liquid layer rotating with the rotor and covets a heavy phase outlet of the separation chamber. The amount of polymer that is needed to form the liquid layer depends on the size and construction of the centrifugal separator. When the layer has been formed the oil that is to be purified is supplied, oil having then already been mixed with polymer. The amount of polymer in the supplied mixture is around 4 %. The polymer that is used for the purification consists of a polyhydroxy alkoxylate.

[0023] Example 2

Rolling oil consisting of a chlorine-paraffin oil shall be purified by the method according to the invention. The oil, which may contain 1-17 % sludge, is mixed with liquid polymer, a polyhydroxy alkoxylate. A mobile ~~5~~ centrifugal separator of the same kind as used in example 1 is used for the purification. Polymer is added to the centrifugal separator when the separator has been started to form the rotating liquid layer. The amount of oil that is to be purified may be between ~~3-15~~ $3 - 15 \text{ m}^3$. Previously, contaminated oil had to be deposited at extremely high costs. Purification according to the technology now suggested, therefore, has important advantages.

Replace ¶ [0025] with the following replacement paragraph:

[0025] The oil is contaminated with ~~0,4~~ 0.1 to 5 % of particles mainly consisting of soot, combustion rests and reaction products from some of the additives of the oil. The main part of the contaminants is present as colloidal or sub micron particles, which are impossible to remove in centrifugal separators or filters.

Replace ¶ [0028] with the following replacement paragraph:

[0028] The amount of contaminants in the oil had decreased by 82 %, from ~~0,96% to 0,18 %~~ 0.96% to 0.18% insoluble matter.

Amendments to the Claims:

The following listing of claims will replace all previous listing and versions of claims:

1. (Currently amended) A method of purifying contaminated oil from particles suspended there in by means of a liquid separation aid having a density larger than that of the oil and being dispersed in the contaminated oil in order to make the particles more easily separable from the oil, the method comprising
 - supplying said contaminated oil and said liquid separation aid into a separation chamber of a rotating centrifugal rotor,

- separating in said separation chamber the particles and the liquid separation aid from the oil by centrifugal force,
- discharging purified oil from the separation chamber through a central light phase outlet thereof and
- discharging separated particles together with separated liquid separation aid from the separation chamber through a heavy phase outlet of the separation chamber, situated radially outside said central light phase outlet,
- pre-charging the separation chamber, before supplying a substantial amount of contaminated oil thereinto, with a starting liquid, which is heavier than the oil and insoluble therein, in an amount such that a layer of the starting liquid forms a liquid seal in the centrifugal rotor, covering said heavy phase outlet,
- supplying thereafter said contaminated oil and said liquid separation aid into the separation chamber, and
- discharging from the separation chamber through said heavy phase ~~outlet~~ ^{5 Jet} outlet at least part of said starting liquid and particles together with liquid separation aid, separated from the oil.

2. (Currently amended) A method according to claim 1, wherein an amount of said liquid separation aid is used as said ~~starting~~ starting liquid.

3. (Previously presented) A method according to claim 1, wherein the oil is a mineral or synthetic oil containing additives giving the oil desired properties for its intended use, the density of the oil being in the interval to about 0.85 to about 1.05 g/cm³ at 40°C.

4. (Currently amended) A method according to claim 3, wherein characterized in that the oil is a pure mineral oil having a density of ~~about~~ about 0.85 to about 0.90 g/cm³ at 40 °C.

5. (Previously presented) A method according to claim 4, wherein the mineral oil is one that has been used as an insulating agent in a transformer or tap changer, is free from additives, apart from necessary oxidation inhibitor, and is contaminated with very small soot particles, the separation aid being a liquid polymer.

6. (Previously presented) A method according to claim 3, wherein characterized in that the oil is one that has been used as a lubrication oil for Diesel engines and is contaminated with small dispersed particles, the separation aid being a liquid polymer.

7. (Currently amended) A method according to claim 5, wherein that the polymer is a polyhydroxy aikoxylate having a density of ~~1.0—1.1~~ 1.0 – 1.1 g/cm³ at 40 °C.

* * *

4. The above changes were made to place the application in immediate condition for allowance. These changes merely render the title more descriptive of the claimed invention per MPEP 606.01 and to correct typographical errors in the substitute specification and claims. These changes do not add new matter, do not alter the scope of the claims, and were not made in view of any prior art or patentability issues. The substitute specification filed 10 JUN 2005 is approved and has been entered.

5. The following is an Examiner's Statement of Reasons for Allowance:

The prior art of record does not teach or fairly suggest a method of purifying oil including the latter three steps, namely the pre-charging, supplying, and discharging steps of claim 1.

6. Any comments considered necessary by applicant must be submitted no later than the payment of the Issue Fee and, to avoid processing delays, should preferably **accompany** the Issue Fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Charles E. Cooley in Art Unit 1797 whose telephone number is (571) 272-1139. The examiner can normally be reached on Mon-Fri. All official facsimiles should be transmitted to the centralized fax receiving number 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/CEC/
Charles E. Cooley
Examiner
Art Unit 1797

7 April 2008

7 April 2008